1 Feb 2001

C-17 Dual Row Airdrop Delivery System

Rigging Instructions 463L Mass Supply

(This document supercedes all previous C-17 463L rigging instructions)

HQ AMC/DOK/DOZ
Unit 3A1
600 Scott Drive
Scott AFB, IL

Introduction

This manual consists of the C-17 Dual Row rigging instruction to facilitate unilateral training requirements. The equipment used is A22 CDS containers on a 463L pallet. These procedures are for the use by trained personnel at 62d AW, 97th AW, and the 437th AW. The procedures and this manual are maintained, coordinated, and disseminated by HQ AMC DOK/DOZ as interim procedures.

NOTE: Completed DRAS platform

1. 463L Pallet

1. Obtain a 463L pallet identify the 108 inch side vs. the 88 inch side
2. Place 463L pallet lengthwise on the dunnage or roller line.

Figure 1-1

3. Mark one end of the 88” side of the 463L pallet as forward.

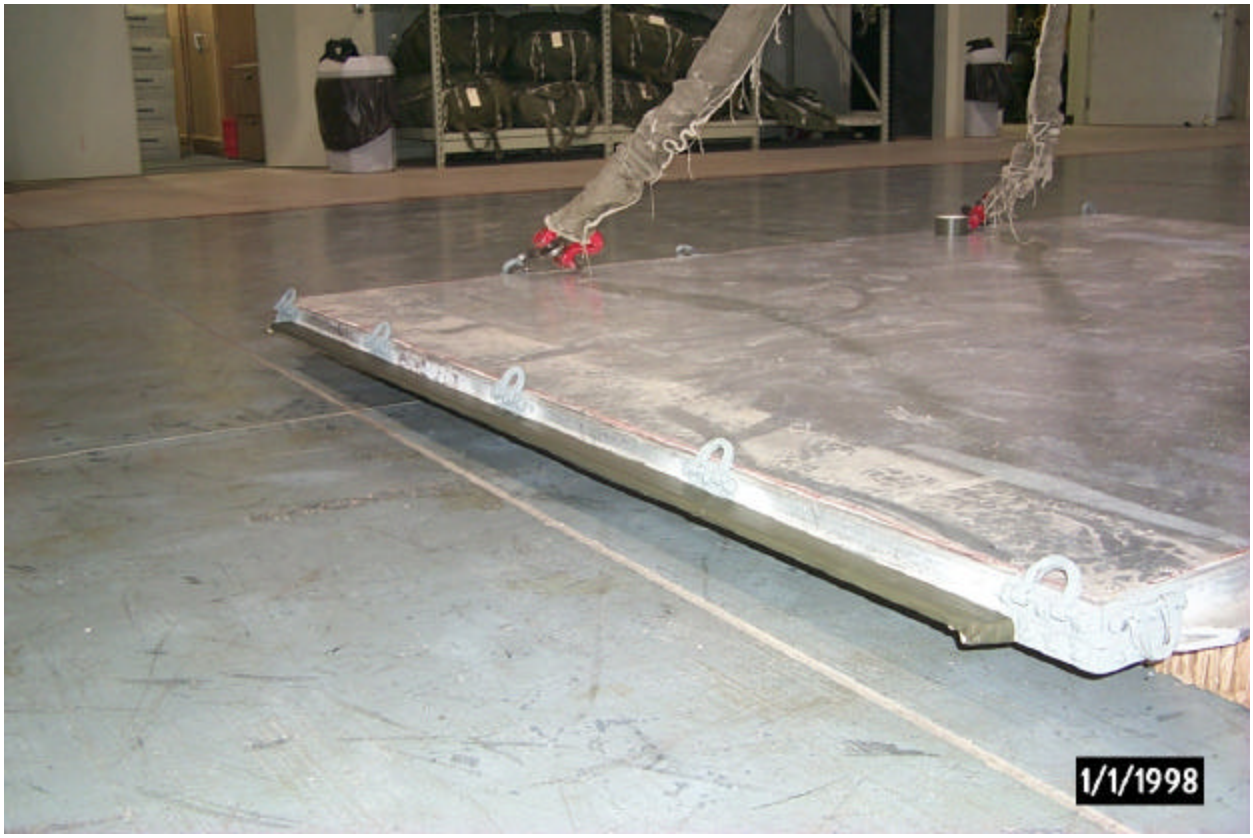

Figure 1-2

Dual Row 463L Pallet (HCU 6/E) Inspection Criteria

1. The procedures and limitations for inspection and repair are found in Technical Order 35D33-2-2-2 and Dual Row Airdrop Test reports.
1. The pallet will be inspected by the following criteria before every use.
2. A side rail cannot be missing, broken, or have any holes. There will be no damage to the locking lip and the locking lip cannot be repaired and used for airdrop.
3. The pallet cannot be bowed more than $5/16^{th}$ of an inch along the entire length or width.
4. The skin of the pallet cannot be missing, delaminated, gouged, or cracked in a corner area or where it will contact a roller conveyer. You may repair an area of damage less than 1" X 12".
5. Missing blind rivets will be replaced prior to use.
6. Tie down rings cannot be broken, bent, cracked, or corroded.
7. Surface corrosion will be repaired prior to any airdrop use.

2. Placing Honeycomb

a. Placement

1. Use 4 pieces of 96” X 36” honeycomb.
2. Stack two pieces of 96” X 36” honeycomb per side on the 463L pallet as shown in figure 1-3.
3. Position honeycomb centered on the forward edge of the 463L pallet as shown.

Figure 2-1

4. Place cloth-backed adhesive tape on the honeycomb adjacent to L2-L5 and R2-R5 as shown in figure 1-4. This is where the Type III nylon cord will contact honeycomb to prevent piercing.
5. Secure honeycomb to 463L pallet on the 108" side with Type III nylon cord using pallet rings L2 to R2, L3 to R-3, L4 to R4, and L5 to R5.

Figure 2-2

3. CDS Containers

a. After preparing the 463L pallet:

1. Build a A-22 barrel load containers IAW T.O. 13C7-1-11.
   (Four A-22 CDS loads are required for each 463L pallet)
2. Ensure the inside barrel on each A-22 container are filled to within 2 inches of capacity.
3. If barrels are used, ensure the bung openings are not covered by the 2’ X 3’ plywood that is placed on top of A-22 load. See figure 1-5

Figure 3-1

b. Install a 6-inch Type X cotton buffer through each of the four (4) A-22 suspension slings. Position cotton buffer between the D-ring and the suspension sling webbing. Tape ends of cotton buffer to prevent them from falling out during airdrop.

NOTE

The installation of the Type X cotton buffer is critical. Its purpose is to reduce the recovery parachute opening shock on the A-22 suspension slings.

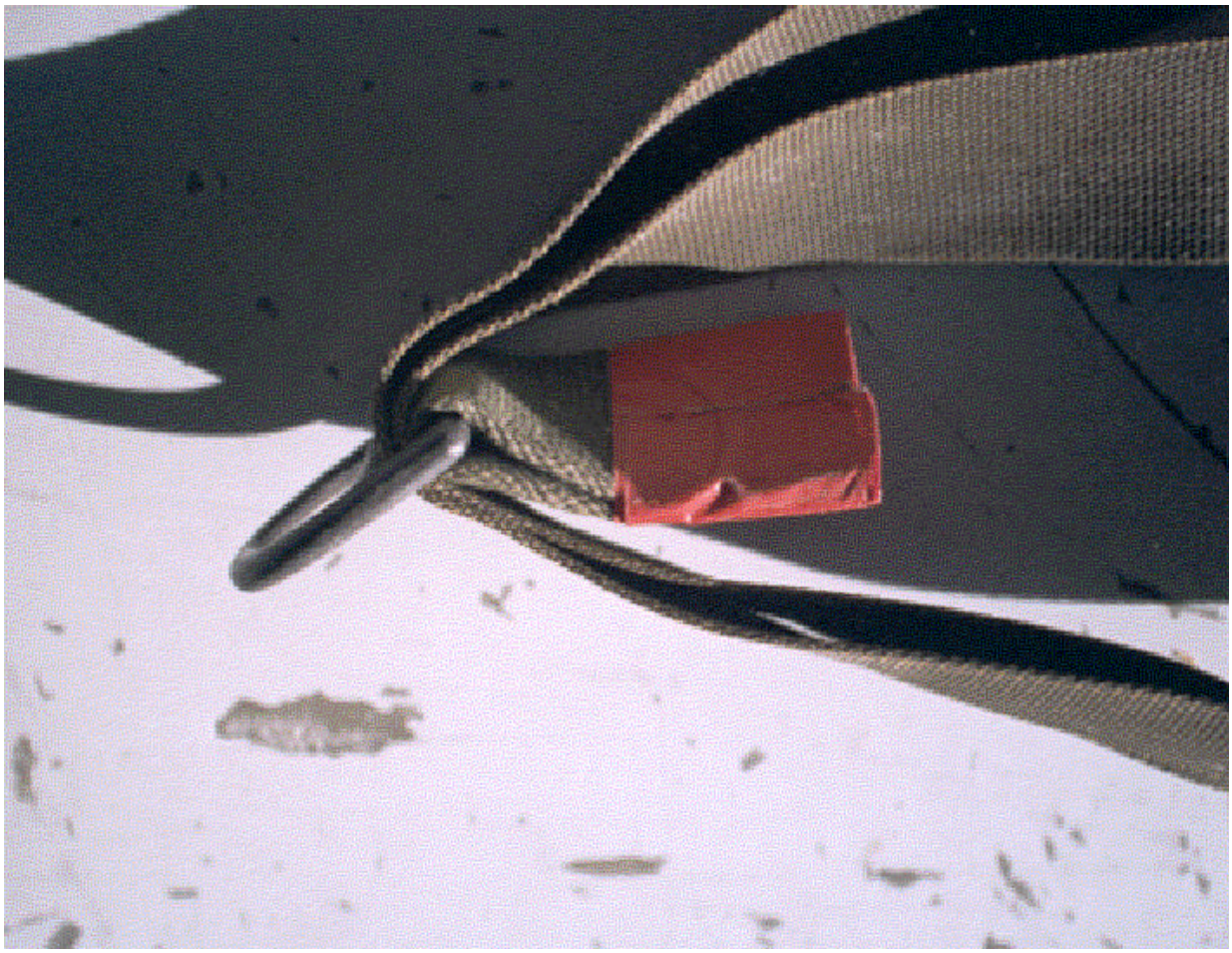

Figure 3-2

4. Install an additional extension to the suspension web using a 3-foot 3-loop, 3 ply Type X nylon sling and a Type V platform clevis.

NOTE

This additional extension provides a better angle on the A-22 container webbing during parachute opening and provides a method of connecting the A-22's to the M-1 ground disconnect.

Figure 3-3

4. Placing A-22's on 463L Pallet

a. First A-22 Container

1. Place first A-22 container on 463L pallet. Ensure bung opening is on the inside of the pallet for accessibility when filling.

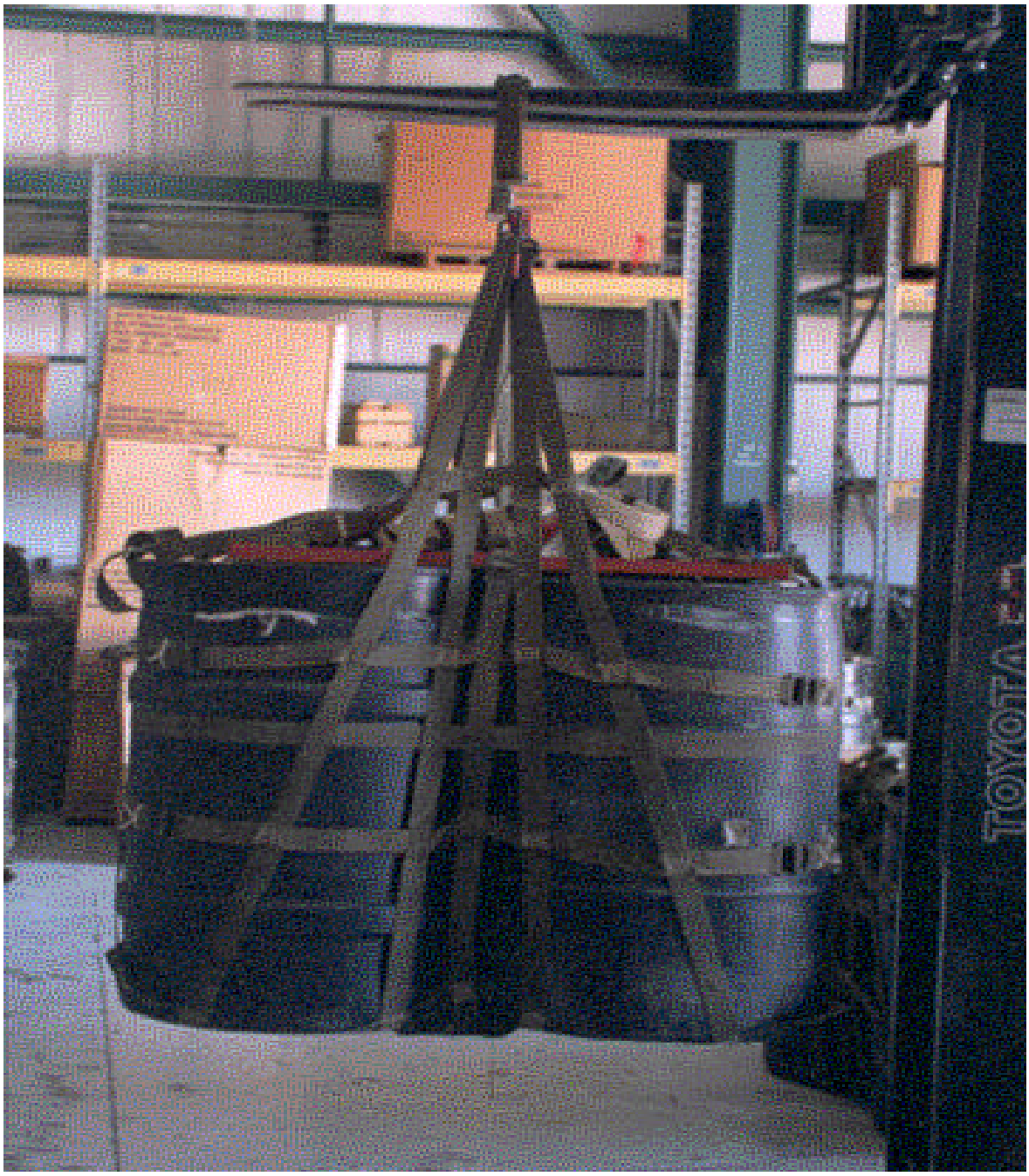

Figure 4-1

2. Align container longitudinally, working from the center of the 463L pallet outward.
3. Position container as far forward on honeycomb as possible without overhanging forward end of 463L pallet.

Figure 4-2

4. There will be approximately 4” – 6” overhang on each side of the 463L pallet.

Figure 4-3

b. Second A-22 Container

1. Place second A-22 container on the 463L pallet next to the first A-22 container.
2. Ensure second A-22 container is aligned the same as the first container.

Figure 4-4

c. Third A-22 Container

1. Position third A-22 container aft of and flush against the first A-22 container.

Figure 4-5

d. Fourth A-22 Container

1. Position fourth A-22 container aft of and flush against the second A-22 container.

NOTE:
Ensure four inner barrel bung openings are accessible to fill with water.

Figure 4-6

5. Lashing A-22 Containers

463L Dual Row bundle restraints consist of required lengths of Type XXVI nylon (or Dacron lashings), D-rings, and load binders.

a. Vertical Restraint

1. Vertical restraint consists of two (2) separate straps (One for each set of A-22 containers)
2. They are routed through and under all top container webbing , and over all side straps running the length of the 108” side of the pallet and centered over the containers.

CAUTION

Ensure the vertical restraint straps do not interfere with the A-22 container webbing.

Figure 5-1

3. They are connected to load binders attached to the 463L pallet rings A2-F2 (containers 1 and 3) and A4-F4 (containers 2 and 4).

Figure 5-2

4. Remove slack, tighten load binders, and safety-tie load binder handles with Type I ¼" cotton webbing.

5. Pad all four vertical restraint load binders with felt and secured with Type III nylon cord (550).

Figure 5-3

b. Aft Restraint

Aft restraint consists of four separate Dacron lashings routed through the A-22 container webbing connected to the 463L pallet rings with load binders.

1. Combine two Dacron lashings and place the joined ends in the middle of the load inside the A-22 slings just above the bottom lower lateral band.
2. Route the lashing around the lowest lateral band and run the lashings outside of the A-22 container webbing. Using D-rings, connect strap to load binders attached to 463L pallet rings L2-R2.
3. Rig the upper restraint strap identical to the previous paragraph except route the lashing inside and above the upper lateral band of the A-22 container to pallet rings L1-R1.
4. Remove slack, tighten load binders, and safety-tie handles with Type I ¼" cotton webbing.

NOTE:

Ensure the routing of the lashing is underneath both vertical restraint tiedown straps.

Figure 5-4

Figure 5-5

c. Forward Restraint

Forward restraint consists of four separate Dacron lashings routed through the A-22 container webbing connected to the 463L pallet rings with load binders.

1. Combine two Dacron lashings and place the joined ends in the middle of the load inside the A-22 slings just above the bottom lower lateral band.
2. Route the lashing around the lowest lateral band and run the lashings outside of the A-22 container webbing. Using D-rings, connect strap to load binders attached to 463L pallet rings L5-R5.
3. Rig the upper restraint strap identical to the previous paragraph except route the lashing inside and above the upper lateral band of the A-22 container to pallet rings L6-R6.
4. Remove slack, tighten load binders, and safety-tie handles with Type I ¼" cotton webbing.

NOTE:

Ensure the routing of the lashing is underneath both vertical restraint tiedown straps.

Figure 5-6

Figure 5-7

d. Lateral Restraint

1. Lateral restraint consists of two sets of two combined Dacron lashings attached together route around containers and inside A-22 slings; connected to pallet rings F1-A5 and F5-A1.

NOTE:

Once all binders are in place, there will be four binders on each side of the 463L pallet.

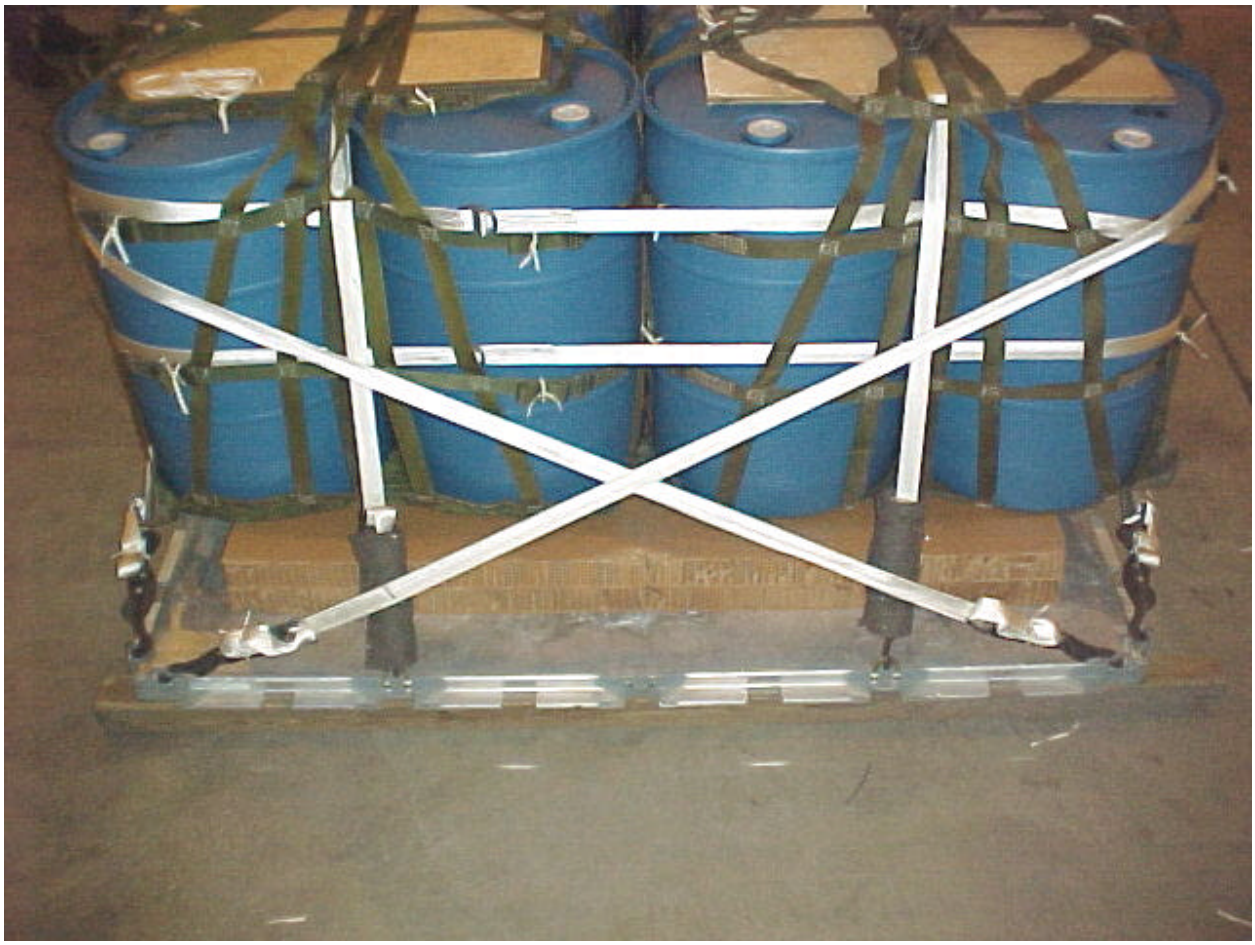

Figure 5-8

6. Parachute Tray

1. Place a 12” by 48” piece of honeycomb, centered on the aft 88” side of the 463L pallet, on top of the A-22 containers.
2. This will provide a stable location for the M-1 parachute release assembly and prevent interference between the guillotine knife and the A-22 container webbing.

Figure 6-1

3. Secure the honeycomb to the vertical restraint lashings in two places with Type I (80 pound) cotton webbing.

Figure 6-2

7. Cargo Parachutes

a. Use two (2) G-12 cargo parachutes on this load. Prepare and stow the cargo parachutes as follows:

1. Prepare two (2) G-12 cargo parachutes, each with 20-foot riser extensions, and position on the forward edge of the load flush with the forward end of the A-22 containers.

Figure 7-1

2. Attach G-12 cargo parachutes together at the front and aft carrying handles using Type III nylon cord (550).

Figure 7-2

3. Route the deployment clustering clevis through both cargo parachute bag bridles.

4. Tie the deployment clustering clevis to the lower portion of both center cargo parachute bag handles with one turn quadruple 80-pound cotton webbing.

Figure 7-3

8. Cargo Parachute Restraints:

1. The parachute restraint consists of two lengths of Type VIII nylon webbing routed diagonally over the parachutes and tied off at specific pallet tiedown rings.

    a. The first parachute restraint is secured at pallet tiedown ring F1 with three (3) alternating ½ hitches and routed up through the forward parachute carrying handle; run diagonally over the parachute and through the center parachute carrying handle (same parachute), then across the opposite parachute, down through the aft carrying handle and secure to pallet tiedown ring R4 using a truckers hitch.
    b. The second Type VIII nylon webbing is routed opposite of the first starting at pallet tiedown ring F5 making a cross in the middle of the cargo parachutes and secured at tiedown ring L4 using a truckers hitch.

Figure 8-1

9. Parachute Release Straps

a. The parachute restraint release system on the 463L pallet load consists of a guillotine knife and parachute release strap attached to the deployment clevis.

b. The guillotine knife is routed and safetied as followed:

1.) Use the guillotine knife around the intersection of both restraint straps.

2.) Thread a 12" length of Type I ¼" cotton webbing through the safety hole. Even the webbing and run the ends down under the restraint strap along the guillotine knife.

3.) Thread the end of the webbing on the left side of the knife rightward behind the bar of the knife. Thread the other end of the webbing leftward in a like manner.

4.) Bring the ends of the webbing up over the top of the bar and tie the ends of the webbing together with a surgeons knot and locking knot.

5.) Run the free end of the release strap down through the large suspension clevis grouping the bridles and back up through the friction adapter.

6.) The release strap requires some play. Fold the excess strap and tie the folds in place with Type I ¼" cotton webbing.

NOTE:

Be sure the release strap is not taut so the knife will not cut the restraining straps before the deployment force is transferred to the deployment clevis.

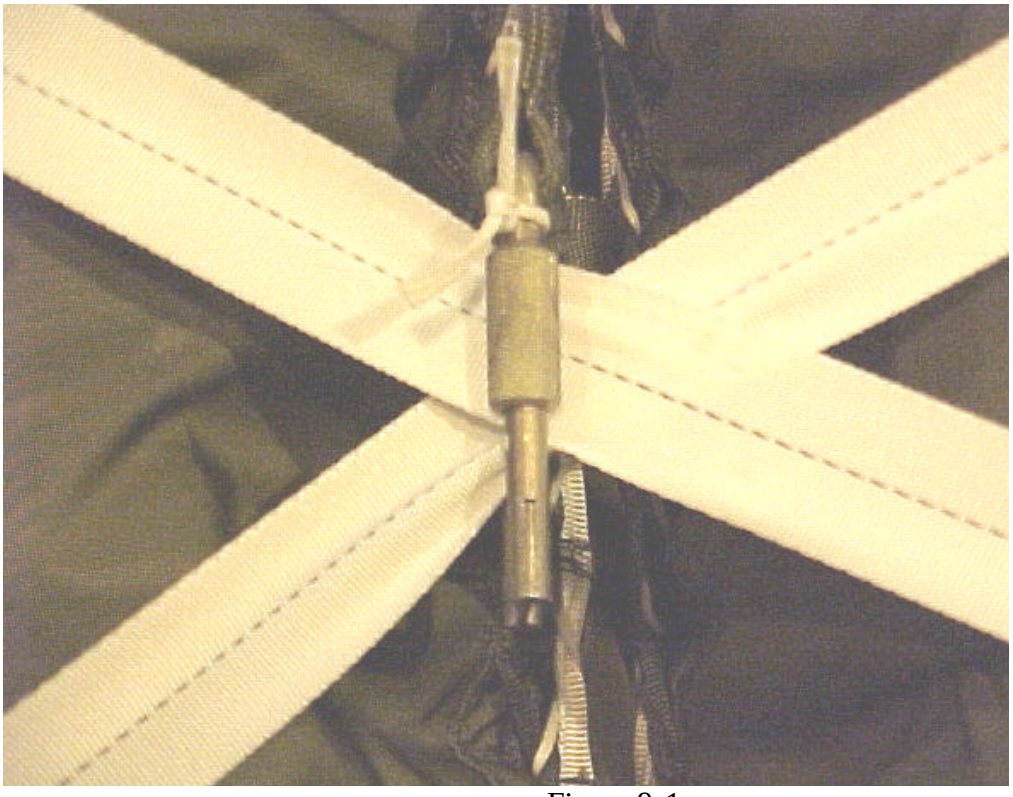

Figure 9-1

10. Installing Parachute Release

a. Inspect, prepare, and install the M-1 cargo parachute release according to T.O. 13C7-1-5.

1. Place the M-1 cargo parachute release assemble on the honeycomb tray.
2. Attach the forward suspension web extensions (left and right) to the lower bolt of the lower suspension link of the M-1 release.
3. Attach the aft suspension web extensions (left and right) to the upper bolt of the lower suspension link of the M-1 release.
4. Paper tape around the web extension collars.
5. Secure M-1 to convenient points on the pallet with Type III nylon cord.

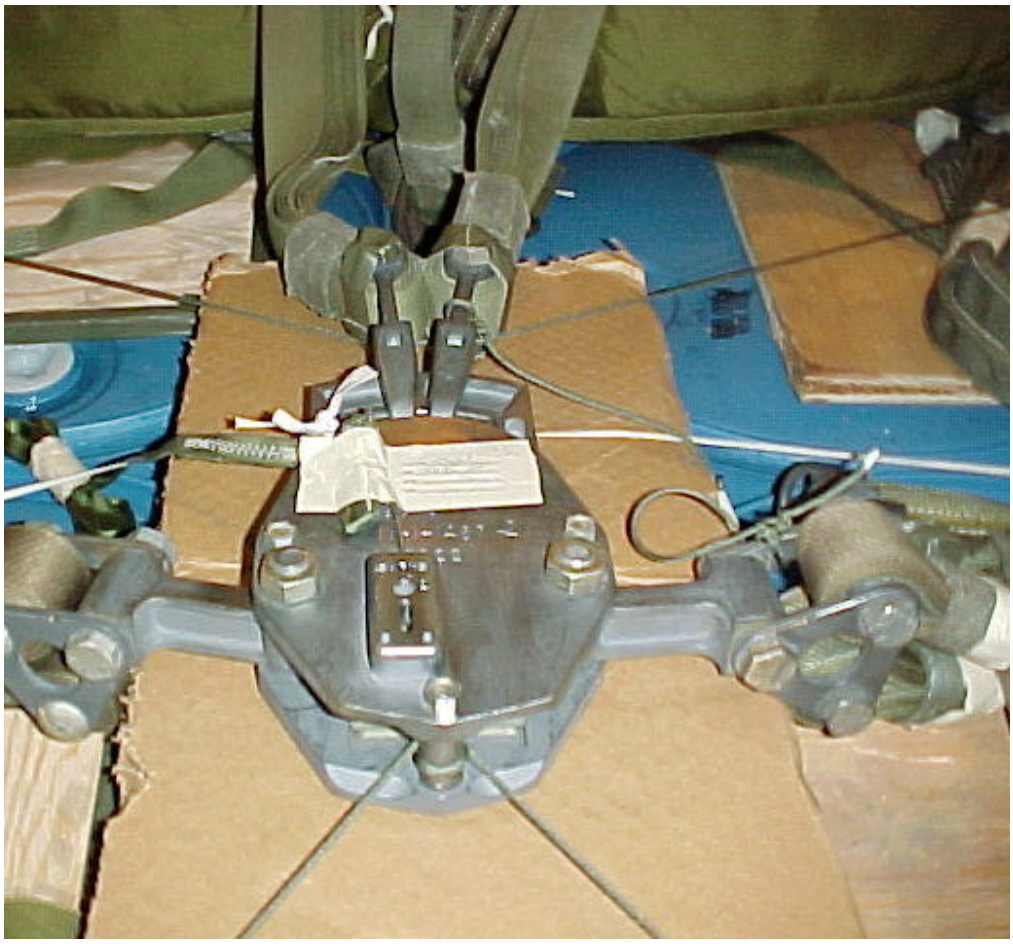

Figure 10-1

6. S-fold any slack in the suspension slings and riser extensions and tie the in place with 1-turn single Type I ¼” cotton webbing.

Figure 10-2

11. Pilot Chute

a. Static Line Preparation

The static line system for the pilot chute consists of a 6-inch connector strap and an approximately 12-foot static line with a 15-foot release line running through the static line.

Figure 11-1

Prepare the static line as follows:

1. Inspect the entire length of the release line.
2. Pull the release line from its sleeve at the upper end until there are equal amounts of release line at both ends of the static line. Ensure the release line is not twisted.

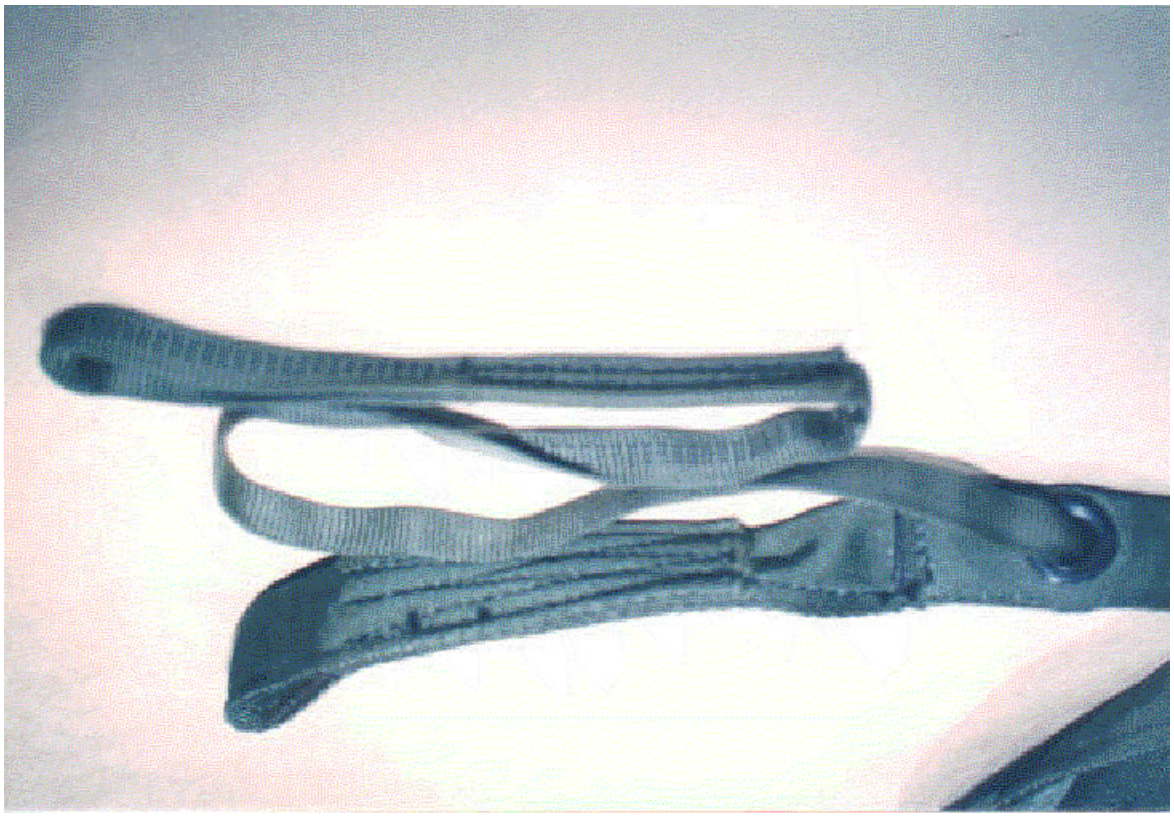

Figure 11-2

3. Lay out the static line assembly with the release line facing up.
4. Pass the top loop in the static line through the connector link on the connector web.

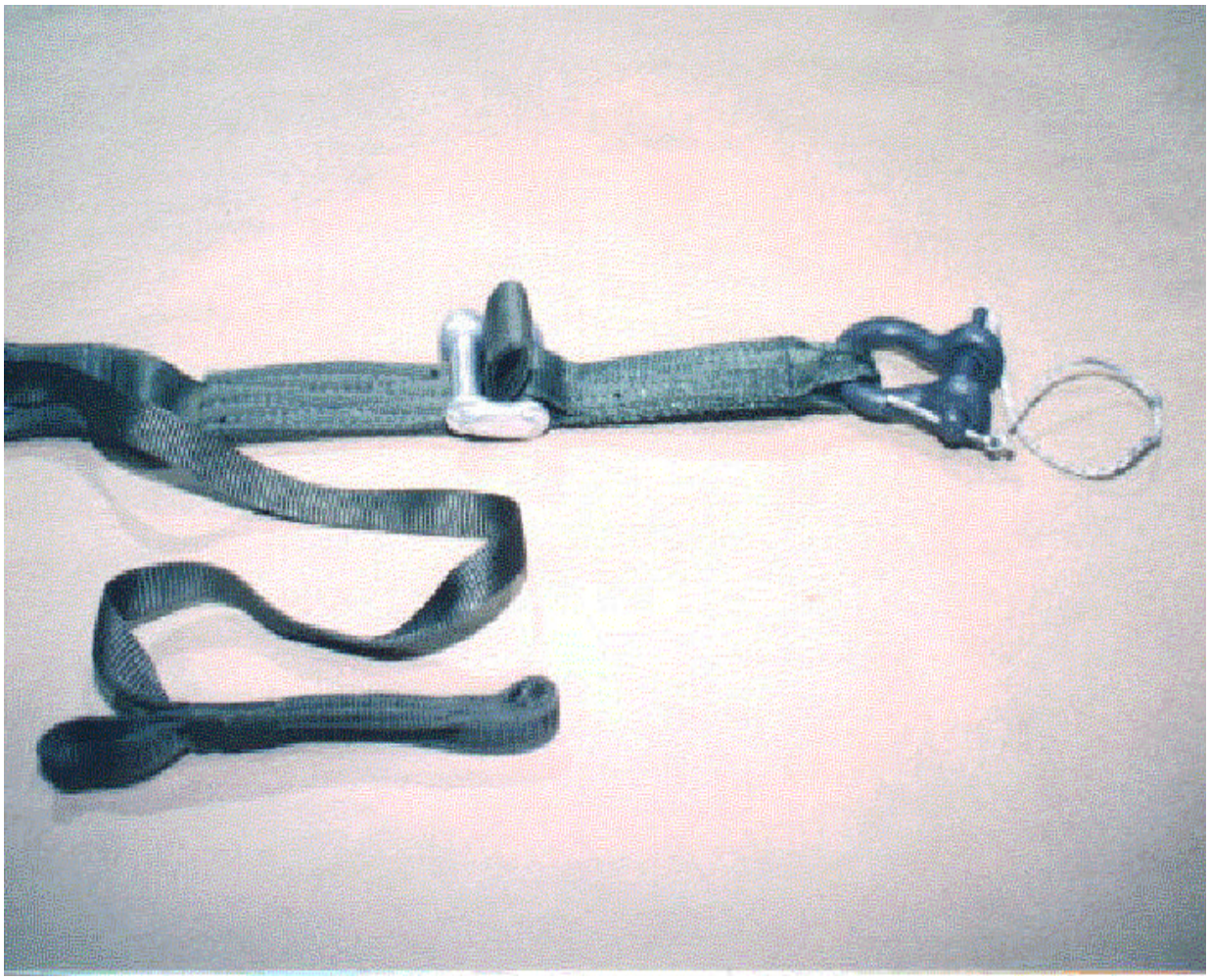

Figure 11-3

5. Run the end loop of the release line through the loop in the static line.

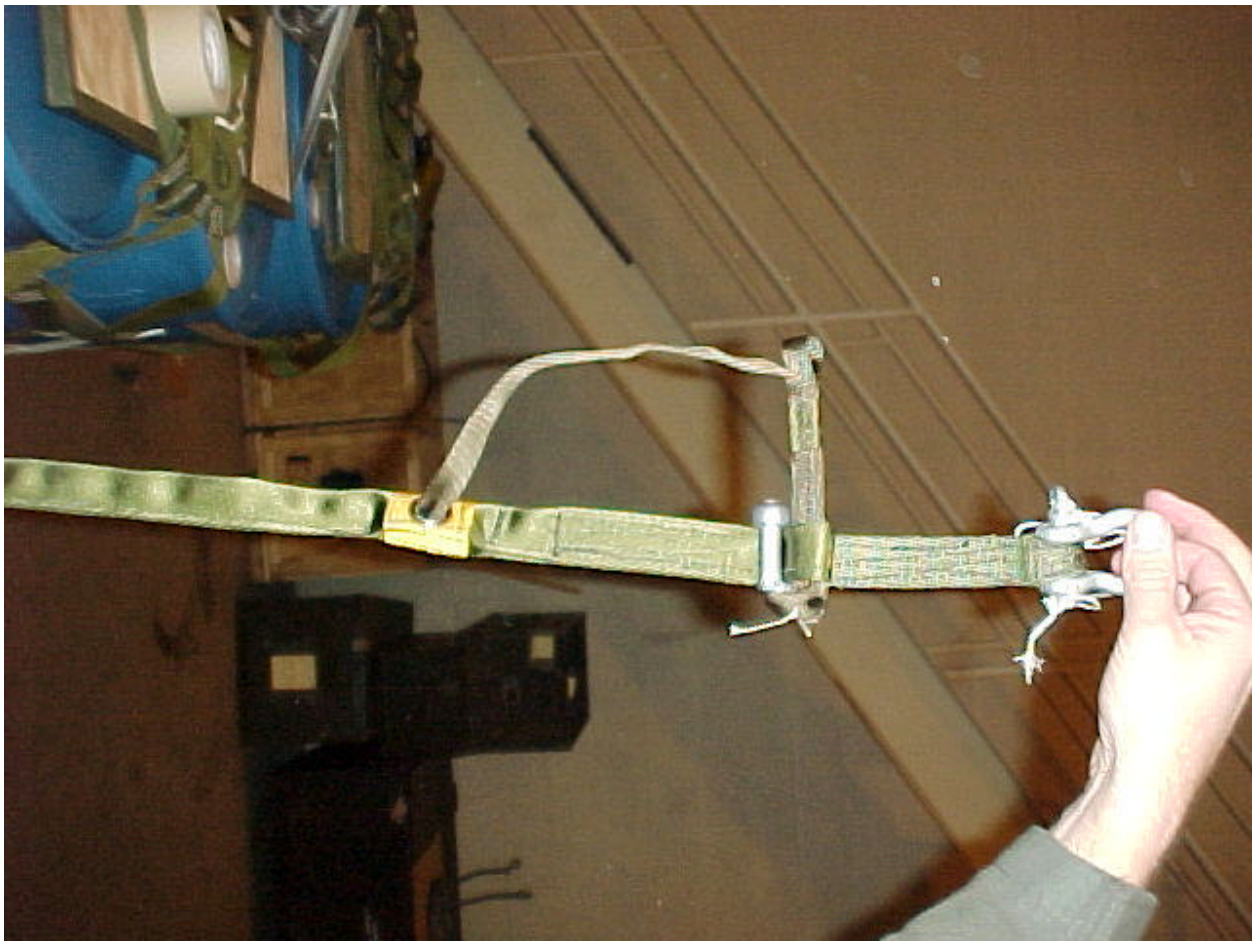

Figure 11-4

6. Tie the loop in the end of the release line to the connector link with a single length of ticket number 5 cotton thread.

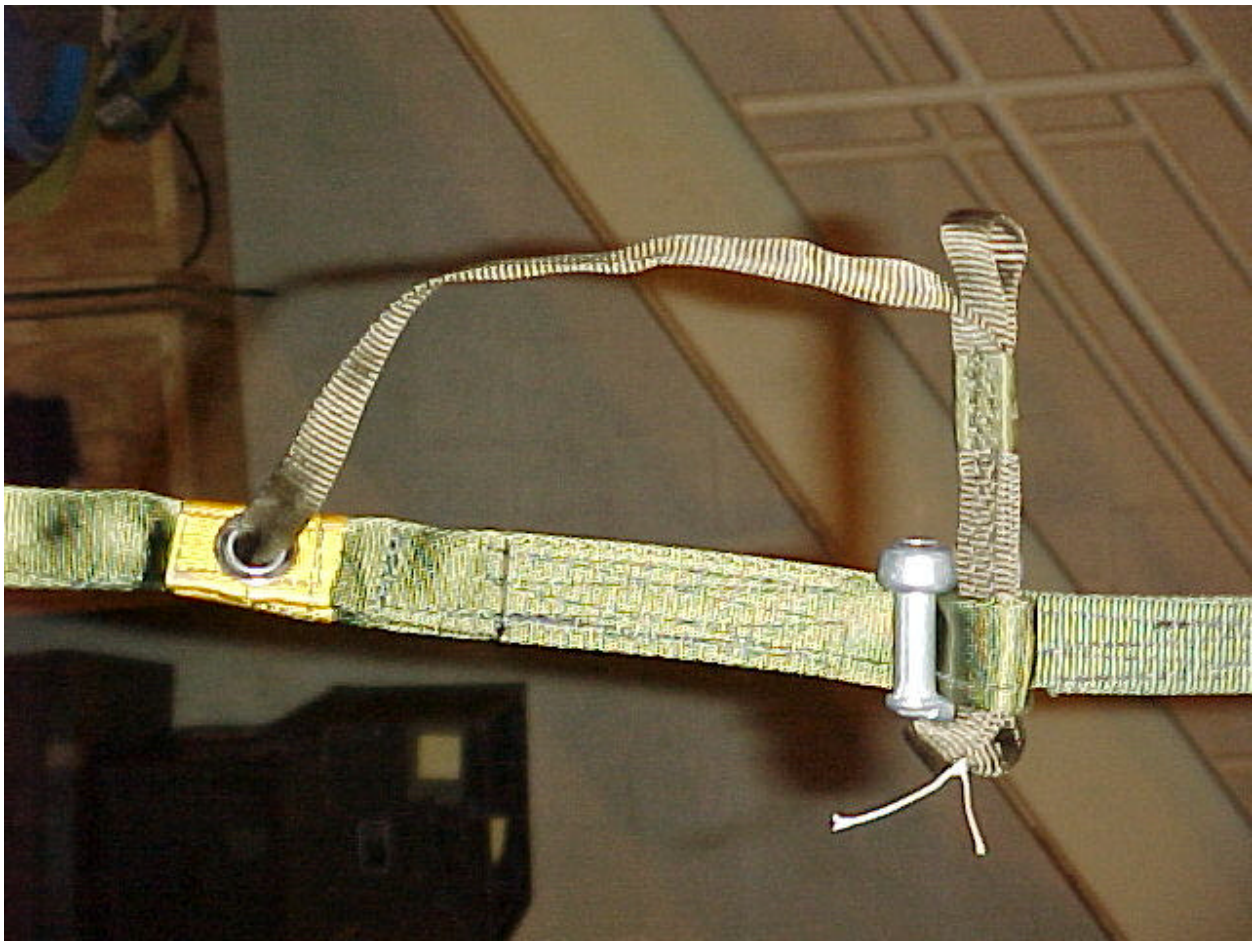

Figure 11-5

7. Secure excess release line, at both ends of the static line, with light weight rubber bands or one turn single 1-inch masking tape.

Figure 11-6

b. Rigging

1. Obtain a 15-foot extraction parachute.
2. Tie off safety loops as shown below.

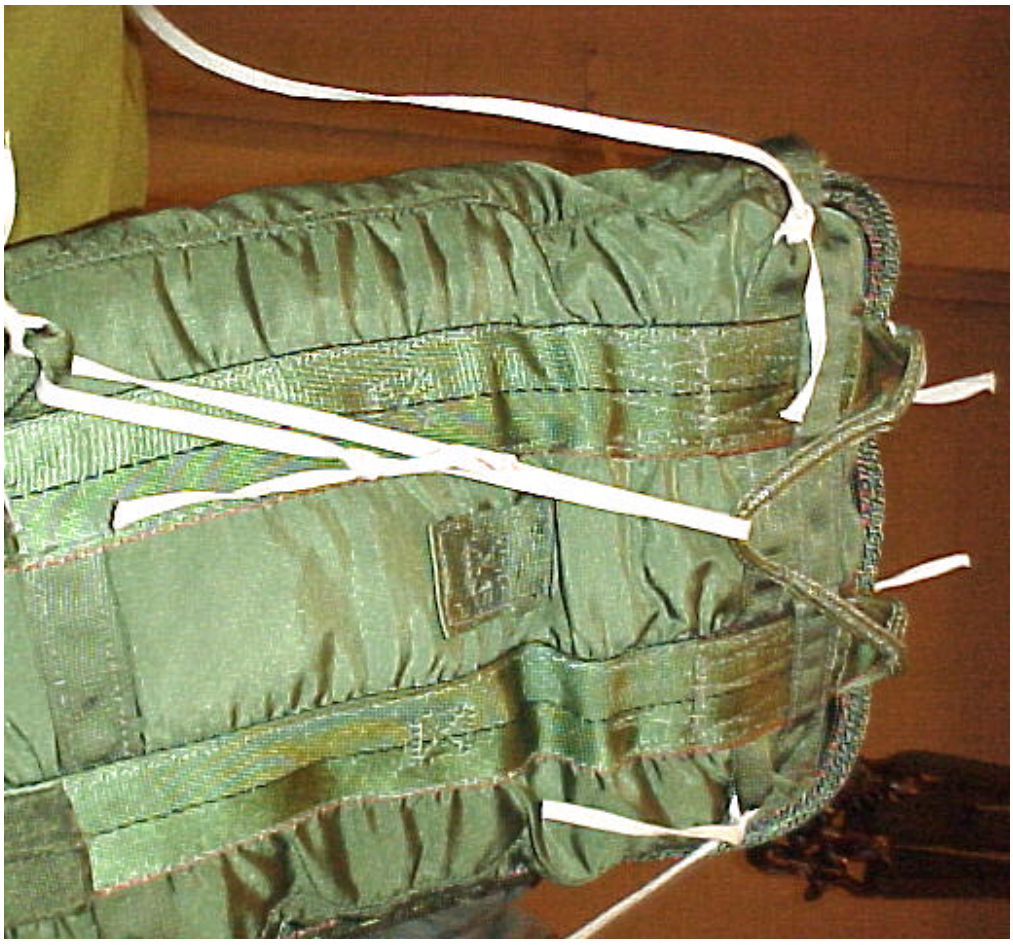

Figure 11-7

3. Fold and tape the pendulum line.

Figure 11-8

4. Girth hitch the static line to both cross handles of the 15-foot extraction parachute.
5. Tie the release line to the apex of the 15-foot extraction parachute with a single turn of ½ inch tubular nylon (1,000 pound).

Figure 11-9

6. Attach a 3 ¾ inch connector link to the 15-foot connector web and secure with one turn single 80-pound cotton webbing.

Figure 11-10

c. Attaching Pilot Chute to Recovery Parachute

1. Place the pilot chute on top of the recovery parachutes with the V-rings facing up.
2. Connect a 9-foot, 2 loop deployment line to the 3 ¾ inch connector link on the pilot chute.
3. Connect the other end of the 9-foot deployment line to the extraction clevis on the recovery parachutes.
4. Secure the deployment line with 80-pound cotton webbing to convenient points on the parachutes/load.

Figure 11-12

d. Securing Pilot Chute

1. The pilot chute is secured to the load by tying a length of 80-pound cotton webbing to one side of the pilot chute around the Type VIII nylon parachute restraint strap.
2. The free end is routed under the pilot chute and under the Type VIII nylon parachute restraint strap on the opposite side of the pilot chute and tied off with a truckers hitch.

NOTE

Do not tie pilot chute restraint tight until the parachute restraint straps are tightened or before the completion of the Before Loading Inspection. This will allow access to the guillotine knife during the inspection.

Figure 11-13

12. Marking Rigging Load

Mark the rigged load according to T.O. 13C7-1-5, including the longitudinal CG.

13. Placing 463L Pallets on K-Loader

When positioning 463L pallets on the K-loaders, place the pallet against the K-loader rail. This will allow the use of the K-loader pallet locks. To keep the 463L pallet in the locks, secure each end of the pallet with a CGU-1/B tiedown strap from the pallet to the K-loader tiedown rings.

AFFTC JOINT AIRDROP INSPECTION RECORD (C-17 DUAL ROW)

1. Unit Being Airdropped		2. Airlift Unit		3. Departure Airfield (Onload)	
4. Type Aircraft	5. Aircraft Serial No.	6. Item Description		7. Rigged IAW FM/TO #	8. Load Position of
LOAD DATA TAG INFORMATION >		9. Weight	10. Length	11. Width	12. Height

CHECK ONLY ITEMS APPLICABLE TO YOUR SPECIFIC LOAD	**Loading** Inspection	
	Before	After
13. PILOT CHUTE		
A. CORRECT SIZE, BAG CLOSING TIES CORRECT		
B. SECURED TO LOAD		
C. DEPLOYMENT LINE CORRECT LENGTH AND LOOP, ATTACHED TO PILOT CHUTE AND PARACHUTE(S), PROPERLY ROUTED AND SAFETIED		
D. RELEASE LINE TIED TO PILOT CHUTE APEX		
E. STATIC LINE ATTACHED TO ANCHOR CABLE		
14. CARGO PARACHUTE SYSTEM		
A. CORRECT NUMBER OF PARACHUTES *(D-BAGS CLUSTERED)*		
B. RELEASE STRAPS ATTACHED TO CLEVIS AT PARACHUTE		
C. RESTRAINT STRAP(S) PROPERLY SECURING PARACHUTE(S) AND ROUTED THROUGH RELEASE KNIFE(S)		
D. RELEASE KNIFE SHARP, PROPERLY SAFETIED		
E. RISER EXTENSIONS CORRECT LENGTH, ATTACHED TO PARACHUTE(S) AND RELEASE		
15. M-1 PARACHUTE RELEASE ASSEMBLY		
A. RELEASE POSITIONED CORRECTLY AND SECURED TO LOAD		
B. PARACHUTE CONNECTOR(S) SEATED IN RETAINER CLAMP		
C. RELEASE TIMER KEYS EXTENDED, ARMING LANYARD WIRE SEATED, LANYARD SAFETIED AND SECURED TO PARACHUTE CLEVIS		
16. SUSPENSION SLINGS		
A. ATTACHED TO COUPLER/CLEVIS/LINKS		
B. CORRECT LENGTH, LOOP, AND NUMBER		
C. ATTACHED TO LOAD OR PLATFORM		
D. PROPERLY PADDED, ROUTED AND SECURED		
17. GENERAL ITEMS		
A. LASHINGS UNIFORM TENSION AND BINDERS SAFTIED		
B. ACCOMPANYING LOAD SECURED		
C. HONEYCOMB FLUSH AGAINST LOAD, GOOD CONDITION, PROPERLY ARRANGED		
D. PLATFORM NOT DAMAGED OR BOWED, BOTTOM CHECKED FOR CONDITION *(CHECKED BEFORE OR DURING LOADING)*		
E. HAZARDOUS MATERIAL CERTIFIED IAW TM 38-250/AFMAN 24-204		
F. EMERGENCY RESTRAINT PROVISIONS ON THE PLATFORM/LOAD		

18. Longitudinal C/G | 19. Lateral C/G

20. BEFORE LOADING INSPECTION CERTIFICATION | DATE/ TIME

A. TRANSPORTED FORCE INSPECTOR

UNIT (PRINT) | LAST NAME (PRINT) | INITALS

SIGNATURE

B. AIR FORCE INSPECTOR

UNIT (PRINT) | LAST NAME (PRINT) | INITIALS

SIGNATURE

21. AFTER LOADING INSPECTION CERTIFICATION | DATE/ TIME

A. TRANSPORTED FORCE

UNIT (PRINT) | LAST NAME (PRINT) | INITIALS

SIGNATURE

B. AIR FORCE INSPECTOR

UNIT (PRINT) | LAST NAME (PRINT) | INITIALS

SIGNATURE

C. AIRCREW LOADMASTER

UNIT (PRINT) | LAST NAME (PRINT) | INITIALS

SIGNATURE

Dual Row JAI Form
1 Feb 2000

Awaiting Revision